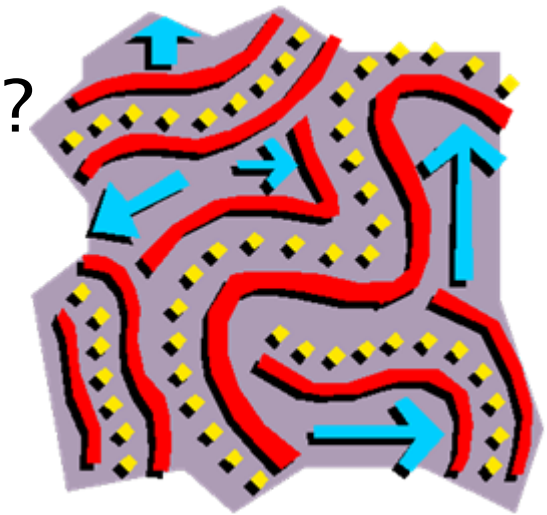
Industrial Hygiene Computer Application Development – Critical Success Factors

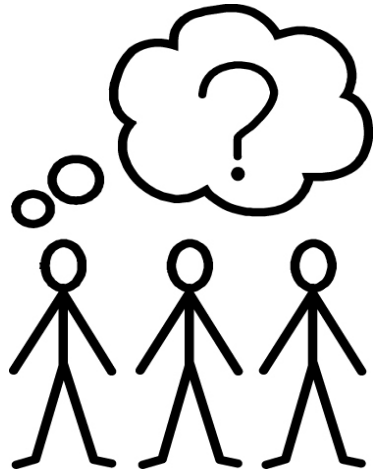
Eric Rasmuson, MS, CIH
Chemistry & Industrial Hygiene, Inc.
303.420.8242

Agenda – Outline – Plan of Action

- Opinion Poll – Impression of success or failure of computer application development initiatives?
- Standish Group results – What is the reality?
- Reasons for success/failures?
- Moving toward success?



Opinion Poll



- Industrial hygiene and computer applications – examples of IH applications and their effectiveness?
- Do IH application development initiatives generally succeed or fail?
- If they do fail, what are some of the reasons?

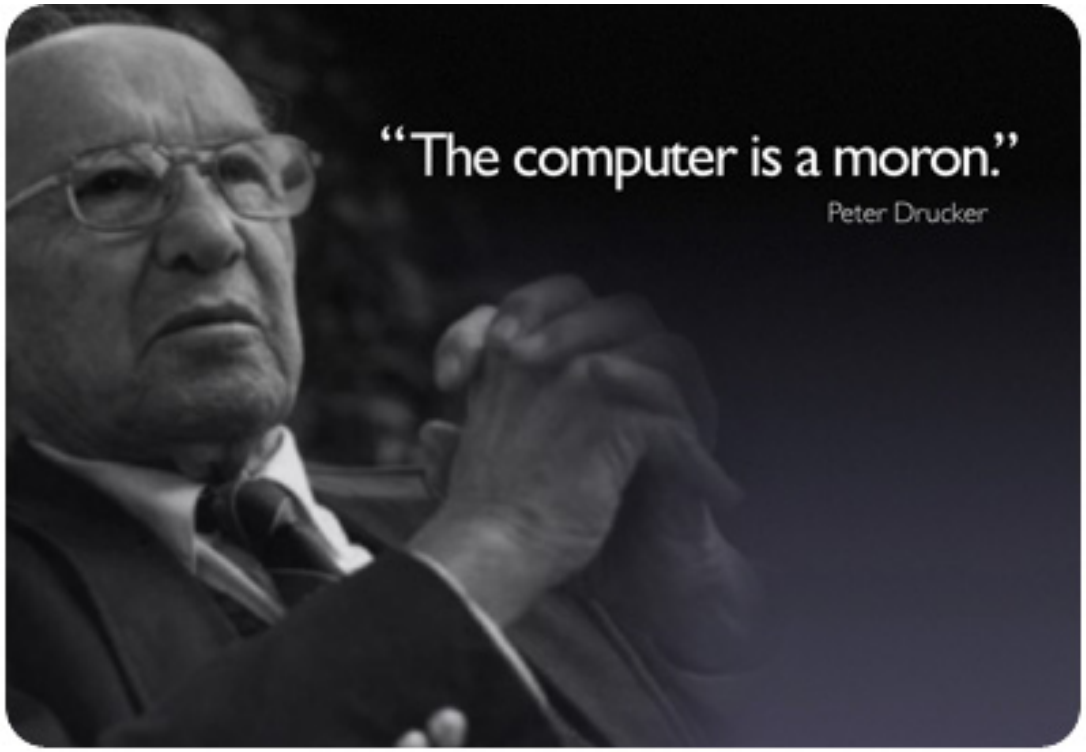
Standish Group

Over a ten year period of 50,000 general industry software application development projects studied:

- 53% Challenged: late, over budget, or developed with less features and functions than required
- 18% Failed: cancelled prior to completion or delivered and never used
- 29% Succeeded: delivered on-time, on budget and with the required features and functionality

www.standishgroup.com

Cause of Excessive Failure Rates?



Missing Pieces of the Puzzle

- Failure to obtain stakeholder buy-In
- Unsuccessful project management
- Lack of formal systems analysis and design
- Ineffective system construction
- Uncoordinated implementation
- Missing application maintenance and updates

Stakeholder Buy-In: Decision Makers

Will the application:

A. Help or hinder core business objectives of the organization?

B. Solve a generally recognized problem within the organization?

C. Provide tangible and intangible return on investment for the organization?

Decision-Maker: Appropriate Buy-In

When the initiative:

A. Furthers core business objectives
B. Solves a relevant problem
C. Improves process efficiency and effectiveness
D. Provides ROI

Stakeholder Buy-In: End Users

Will the application:

A.Improve the effectiveness of business processes?

B.Be understood, accepted, and well-used by end-users?

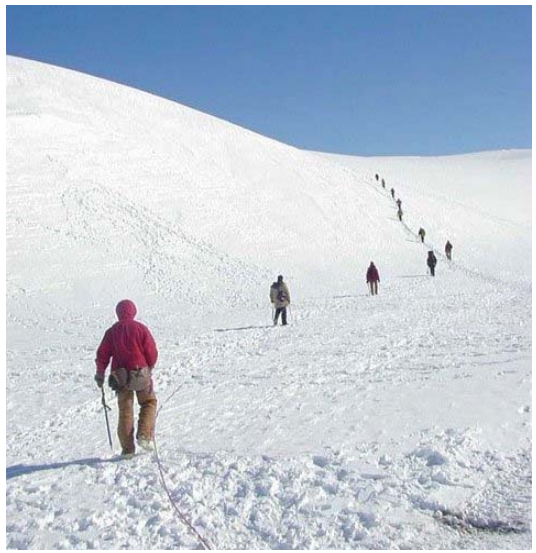
Software Development Project Management

A. Undefined authority structure!
B. Budget requirements unknown!
C. Undefined scope and milestones!
D. Schedule slippage!
E. Targets misunderstood!
F. Project scope shifted!
G. Team communication absent!

Woops! Project Failure!

Successful Project Management

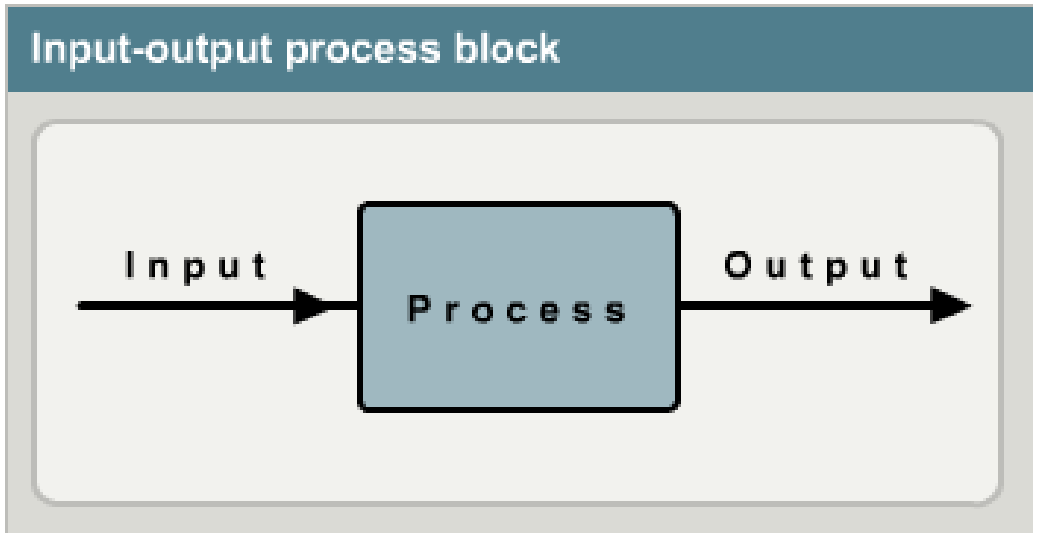
A. Authority structure defined
B. Scope, budget, and project milestones established and met
C. Grooving team communication and collaboration



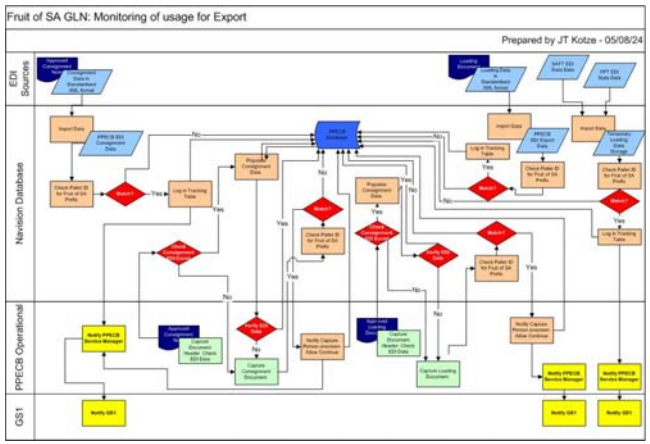
Systems Analysis

- A problem-solving technique that decomposes a system (i.e. business process) into its component pieces for the purpose of studying how well those component parts work and interact to accomplish their purpose

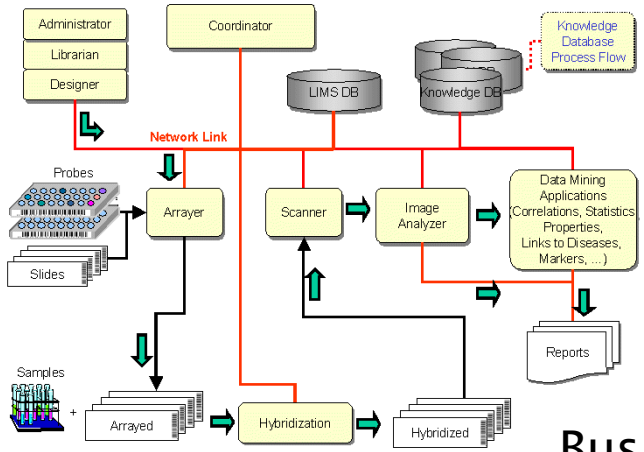
  -Whitten, J., Bentley, L., Systems Analysis and Design Methods, Fifth Edition, McGraw Hill, 2000



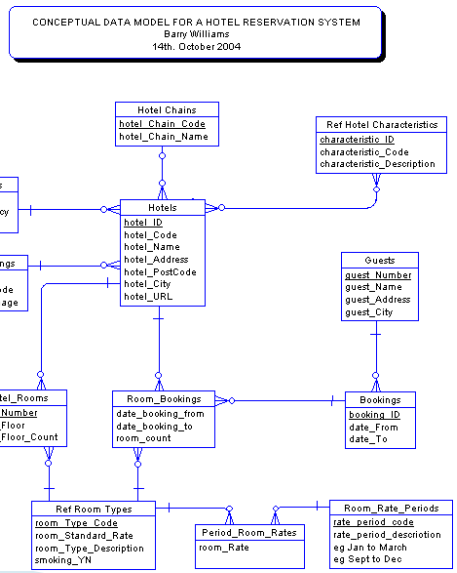
Systems Analysis Result – Models



Business Process Flow Models



Business Interface Model

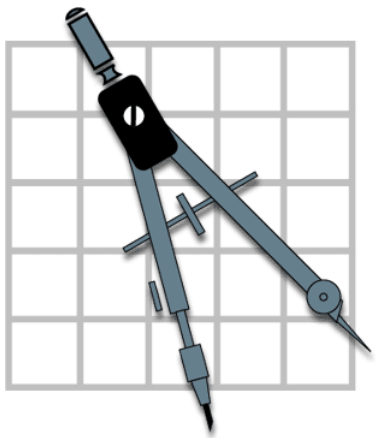


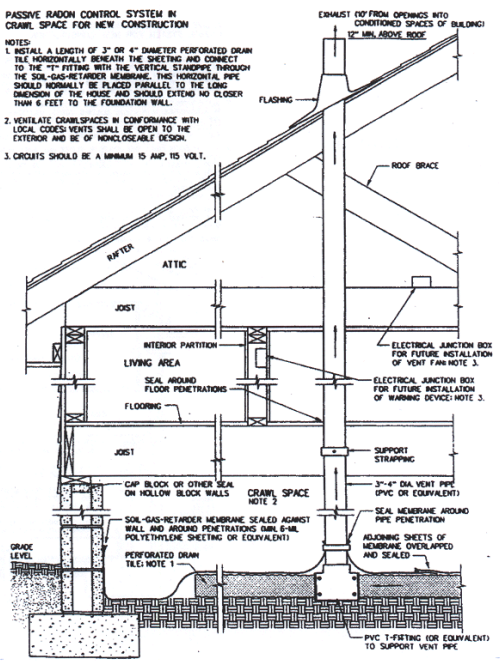
Conceptual Data Models – Entity Relationship Diagrams

Systems Design

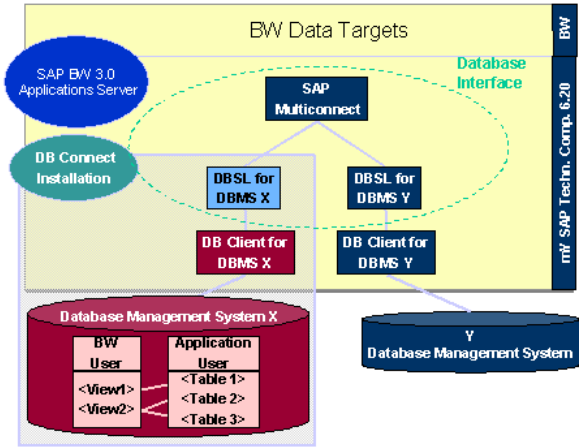
- A complimentary problem-solving technique (to systems analysis) that reassembles a system's component pieces back into a complete system

-Whitten, J., Bentley, L., Systems Analysis and Design Methods, Fifth Edition, McGraw Hill, 2000

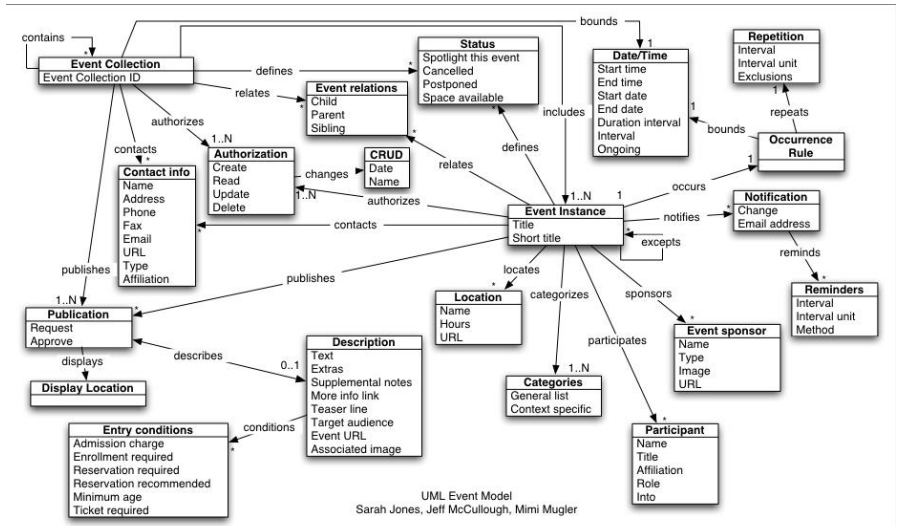




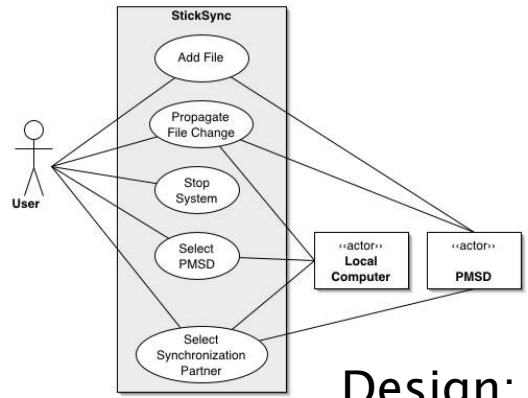
Systems Design Result –Models



Design: Database Schema



Design: UML Class Models



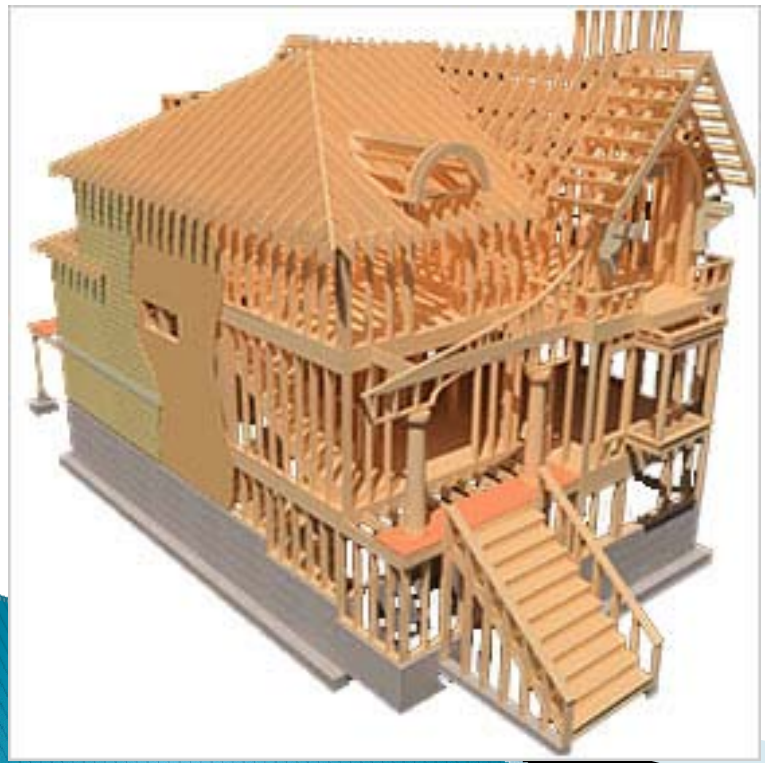
Design: Use Case Diagrams

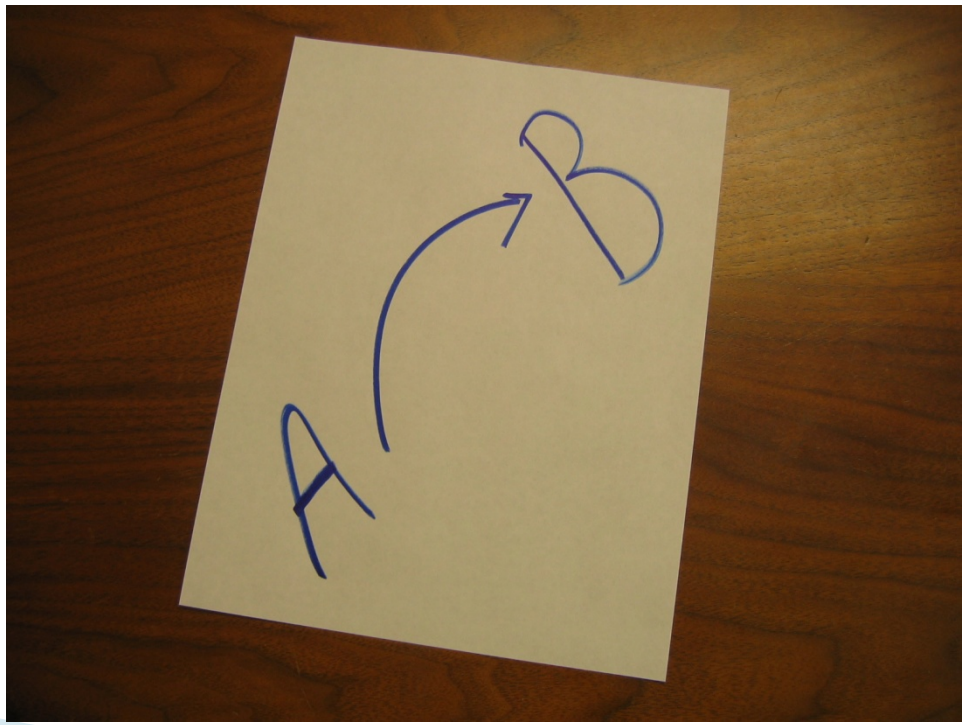
Other Application Specification Diagrams and Requirements Documentation…

System Construction and Implementation

- The construction of the new system and the delivery of the system into the day-to-day operation of the business

-Whitten, J., Bentley, L., Systems Analysis and Design Methods, Fifth Edition, McGraw Hill, 2000

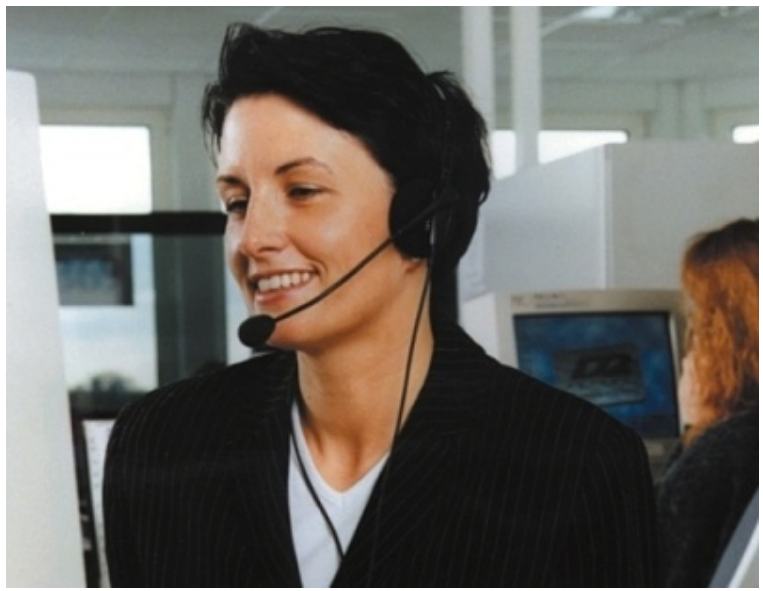




System Operations and Support

- Operations: day-to-day execution of an information system's business processes
- Support: the ongoing technical support for users, as well as the maintenance required to fix any errors, omissions, or new requirements that may arise (new versions)

-Whitten, J., Bentley, L., Systems Analysis and Design Methods, Fifth Edition, McGraw Hill, 2000

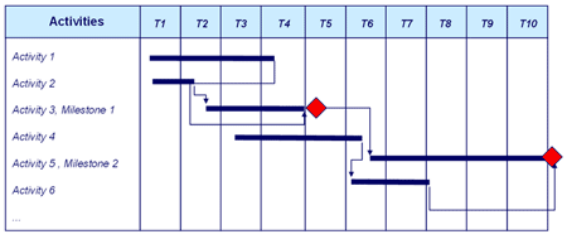


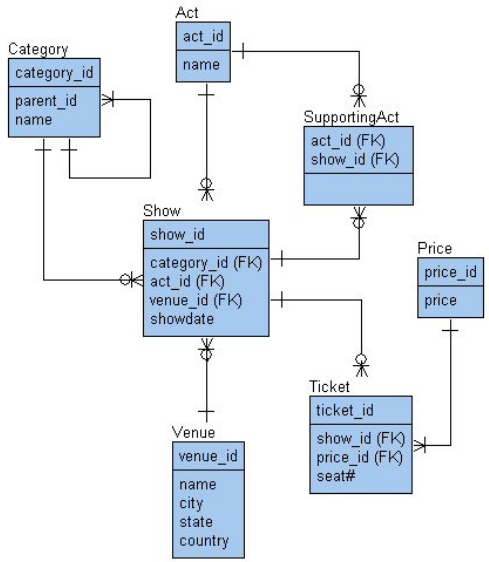
Different Approaches Using the Critical Pieces of the Process

- Code and Fix
- Waterfall
- Sashimi
- Spiral
- Incremental
- Test-Driven
- Agile
- Extreme Programming

http://www.isr.uci.edu/~alspaugh/2006-07/inf43/inf43-process.html

Conclusions





Industrial Hygiene Computer Application Development – Critical Success Factors

Eric Rasmuson, MS, CIH
Chemistry & Industrial Hygiene, Inc.
erasmuson@c-ih.com